

### **REMARKS**

This is a full and timely response to the Office Action mailed October 6, 2008, submitted concurrently with a two month extension of time to extend the due date for response to March 6, 2009.

By this Amendment, claim 1 has been amended to incorporate the subject matter of claim 3. Thus, in view of the amendments to claim 1, claim 3 has been canceled without prejudice or disclaimer to its underlying subject matter. Thus, claims 1, 2 and 4-12 are currently pending in this application. Support for the claim amendments can be readily found variously throughout the specification and the original claims.

In view of these amendments, Applicant believes that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

### **Obviousness-Type Double Patenting Rejection**

Claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over the combined limitations of claims 1-14, 16, 17, 19-24, 31, and 32 of Akaho et al. (copending Patent Application No. 10/503,490 - see U.S. Patent Application Publication No. 2005/0107497 A1). Further, claims 1-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over the combined limitations of claims 27, 28, 42, and 43 of Yonezawa et al., (copending Patent Application No. 10/433,956 - see U.S. Patent Application Publication No. 2004/0053061 A1). Applicant respectfully traverses these rejections. However, in the interest of expediting the allowance of the present application, Applicant would consider submitting terminal disclaimers to overcome these rejections upon the resolution of the rejections under 35 U.S.C. §102 and §103. Thus, Applicant respectfully requests that the Examiner hold these rejections in abeyance until the resolution of the rejections under 35 U.S.C. §102 and §103.

### **Rejections under 35 U.S.C. §102 and 103**

Claims 1-8 and 12 are rejected under 35 U.S.C. §102(a) or §102(b) as allegedly being anticipated by Akaho et al. (WO 03/066741 A1 - see English language equivalent U.S. Patent

Application Publication No. 2005/0107497 A1 for translation), Yonezawa et al. (WO 02/46312 A1), or Yonezawa et al. (U.S. Patent Application Publication No. 2004/0053061 A1 which is an English language equivalent of WO 02/46312 A1). Further, claims 9-11 are rejected under 35 U.S.C. §102(a) or §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly being obvious over Akaho et al. (WO 03/066741 A1), Yonezawa et al. (WO 02/46312 A1), or Yonezawa et al. (U.S. Patent Application Publication No. 2004/0053061 A1). Applicant respectfully traverses these rejections.

To constitute anticipation of the claimed invention under U.S. practice, the prior art reference must literally or inherently teach each and every limitation of the claims. Further, to establish a *prima facie* case of obviousness, the cited reference(s) must teach or suggest the invention as a whole, including all the limitations of the claims. Here, in this case, none of the cited references, either alone or in combination, teach or suggest all of the limitations of the claims with particular emphasis on the limitations "*an epoxy resin having an epoxy equivalent weight of 100 - 2,000*" and "*wherein said epoxy hardener comprises at least one type selected from the group consisting of hydrophobic phenol compounds represented by the following formulas (1) - (3)*".

One of the important features of the present invention is that the thermosetting resin composition contains both a combination of the epoxy resin having an epoxy equivalent weight of 100-2,000 and the epoxy hardener comprising at least one type selected from the group consisting of hydrophobic phenol compounds represented by the formulas (1)-(3).

Applicant wishes to emphasize that the feature of the epoxy equivalent weight of 100-2,000 plays a critical role in the present invention for attaining the superior physical and mechanical properties of the present invention, namely, the low linear expansion coefficient at elevated temperatures, as described in paragraph [0053] of the present Patent Application Publication No. 2008/0233386. In addition, the feature of the epoxy hardeners possessing the chemical structures as depicted in Formulas (1)-(3) plays a critical role in the present invention for achieving high heat resistance and low linear expansion at elevated temperature 10-50°C higher than the T<sub>g</sub> of the cured epoxy resin compounds as described in paragraphs [0019]-[0028] and clearly illustrated in Example 3 vs. Comparative Example 3 in Table 1 of the present Patent Application Publication.

Based on Applicant's review of Akaho et al. and Yonezawa et al., Applicant believes that neither reference teaches (1) the importance of the claimed epoxy equivalent weight for achieving the much improved thermal stability and desired mechanical properties for sheet or laminate applications and (2) the importance of the claimed epoxy hardeners possessing the particular chemical structures for achieving high heat resistance and low linear expansion. In other words, the cited references do not at all teach or suggest the combination of the claimed epoxy resins and the claimed epoxy hardeners.

In support, Applicant wishes to note the following for the Examiner's consideration. Akaho et al. teaches a resin composition possessing a mean linear expansion coefficient of up to  $17 \times 10^{-3} [^{\circ}\text{C}^{-1}]$  over the temperature range of 10 to 50°C higher than the Tg of the resin composition. In contrast, the epoxy resin composition of the present invention clearly has a much improved (lower) linear expansion coefficient of  $4 \times 10^{-5} [^{\circ}\text{C}^{-1}]$  over a wide temperature range from 10-50°C lower than the Tg to 10-50°C higher than the Tg of the cured resin composition. In effect, the present invention possesses a dimension stability, which is 2 to 3 orders of magnitude of improvement in linear expansion coefficient as compared to the prior art. Such superior property is only achievable by the proper combination of epoxy resins of epoxy equivalent weight of 100-2,000, and the specific phenol type hardeners of Formula 1-3. Hence, the superior results of the present invention allows for the loading of the inorganic fillers to be properly tailored for better processability for various operations during the manufacturing process for electronic substrates, laminated boards, copper-clad substrates, printed boards, adhesive sheets, among others.

Thus, since the superior results of the present invention (i.e. low linear expansion of the cured epoxy resin compounds and superior dimensional stability) can only be obtained by the combination of the claimed epoxy resins and claimed epoxy hardeners which are not taught or suggested in Akaho et al. and Yonezawa et al., Applicant submits that these rejections can no longer be sustained and should be withdrawn. As the Examiner already knows, a showing of superior and unexpected properties can rebut a *prima facie* case of obviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

Claims 2 and 4-12 depend directly or indirectly from claim 1 and include all of the features of claim 1. Thus, it is respectfully submitted that the dependent claims are allowable at

least for the reasons claim 1 is allowable as well as for the features they recite. Thus, withdrawal of the rejection is respectfully requested.

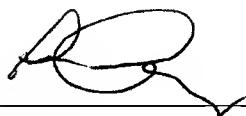
Further, Applicant asserts that there are also reasons other than those set forth above why the pending claims are patentable. Applicants hereby reserve the right to submit those other reasons and to argue for the patentability of claims not explicitly addressed herein in future papers.

### CONCLUSION

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Dated: March 6, 2009

Respectfully submitted,

By:  \_\_\_\_\_

Lee Cheng

Registration No.: 40,949

CHENG LAW GROUP PLLC

1100 17th Street, N.W.

Suite 503

Washington, DC 20036

(202) 530-1280

Attorneys for Applicant

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